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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,284	02/18/2004	John H. Santhoff	048CIP-121	4204

44279 7590 05/15/2006

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EXAMINER	
JAGANNATHAN, MELANIE	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,284	SANTHOFF ET AL.	
	Examiner	Art Unit	
	Melanie Jagannathan	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Examiner has considered Amendment after Final rejection mailed 4/18/2006.
- Claims 1-20 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-4, 6-9, 11-17, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster US 6,754,195 in view of Wynbeek US 6,853,835.

Regarding claims 1, 6-7, the claimed providing a device structured to operate at first chip rate, receiving a plurality of pulses at second chip rate and interpolating second chip rate pulses to first chip rate is disclosed Webster by mixed signal devices (Figure 1, elements 103-109), operating in 2.4 GHz band, communicating with each other at different or higher data rates from each other. Devices send to each other mixed signal packets (Figure 3) with a Barker preamble (Figure 3, element 303) transmitted at 1 Mbps, a Barker header (element 305) transmitted at 1 or 2 Mbps and OFDM symbols (Figure 3, element 307) incorporating payload data transmitted at any selected data rate from among rates of 24, 36, 48, or 54 Mbps. See column 7, lines 23-32. A mixed signal receiver (Figure 2, element 201) is configured to receive mixed signal packet including Barker preamble, Barker header and OFDM symbols (Figure 3, element 301). See column 5, lines 49-67, column 6, lines 1-40, column 9, lines 20-58.

Webster does not disclose the claimed the ultra-wideband communication method and ultra-wideband device. Wynbeek discloses a wireless communication system with a base station (Figure 2, element 203) containing a carrier wave-based transmitter (element 207) and ultra-wideband receiver (element 208) and a mobile device (element 220) with a carrier wave-based receiver (element 223) and ultra-wideband transmitter (element 228). The mobile and base stations communicate using a train of wideband pulses. Examiner interprets the base station as the master ultra-wideband transceiver. See column 2, lines 49-56, lines 63-67, column 3, lines 1-7.

At the time the invention was made it would have been obvious to modify the mixed signal devices with first and second transceivers of Webster with the ultra

wideband transmitter and receiver of the devices in Wynbeek. One of ordinary skill in the art would be motivated to do this since ultra-wideband communication employs a very low transmission power level and thus is highly resistant to jamming and interception. See column 3, lines 8-18, lines 28-33.

Regarding claims 2, 6-7, the claimed device includes rate controller that converts the plurality of ultra-wideband pulses from second chip rate to first rate is disclosed by Webster by mixed signal receiver receiving mixed signal packet containing a first kernel at a first rate, 802.11b Barker preamble and a second kernel at a second rate, OFDM symbols of 802.11a standard.

Webster does not disclose the claimed the ultra-wideband communication method and ultra-wideband device. Wynbeek discloses a wireless communication system with a base station (Figure 2, element 203) containing a carrier wave-based transmitter (element 207) and ultra-wideband receiver (element 208) and a mobile device (element 220) with a carrier wave-based receiver (element 223) and ultra-wideband transmitter (element 228). The mobile and base stations communicate using a train of wideband pulses. Examiner interprets the base station as the master ultra-wideband transceiver. See column 2, lines 49-56, lines 63-67, column 3, lines 1-7.

At the time the invention was made it would have been obvious to modify the mixed signal devices with first and second transceivers of Webster with the ultra wideband transmitter and receiver of the devices in Wynbeek. One of ordinary skill in the art would be motivated to do this since ultra-wideband communication employs a

very low transmission power level and thus is highly resistant to jamming and interception. See column 3, lines 8-18, lines 28-33.

Regarding claims 3, 8, the claimed time duration that ranges from about ten picoseconds to about one millisecond is disclosed by Webster by mixed signal packet has sample rate 20 MHz which inversely would amount to around one millisecond for time duration. See column 7, lines 23-37.

Webster does not disclose the claimed the ultra-wideband communication method and ultra-wideband device. Wynbeek discloses a wireless communication system with a base station (Figure 2, element 203) containing a carrier wave-based transmitter (element 207) and ultra-wideband receiver (element 208) and a mobile device (element 220) with a carrier wave-based receiver (element 223) and ultra-wideband transmitter (element 228). The mobile and base stations communicate using a train of wideband pulses. Examiner interprets the base station as the master ultra-wideband transceiver. See column 2, lines 49-56, lines 63-67, column 3, lines 1-7.

At the time the invention was made it would have been obvious to modify the mixed signal devices with first and second transceivers of Webster with the ultra wideband transmitter and receiver of the devices in Wynbeek. One of ordinary skill in the art would be motivated to do this since ultra-wideband communication employs a very low transmission power level and thus is highly resistant to jamming and interception. See column 3, lines 8-18, lines 28-33.

Regarding claims 4, 9, the claimed OFDM ultra-wideband pulses is disclosed by Webster by OFDM symbols (Figure 3, element 307) incorporating payload data transmitted at any selected data rate from among rates of 24, 36, 48, or 54 Mbps. See column 7, lines 23-32.

Webster does not disclose the claimed the ultra-wideband communication method and ultra-wideband device. Wynbeek discloses a wireless communication system with a base station (Figure 2, element 203) containing a carrier wave-based transmitter (element 207) and ultra-wideband receiver (element 208) and a mobile device (element 220) with a carrier wave-based receiver (element 223) and ultra-wideband transmitter (element 228). The mobile and base stations communicate using a train of wideband pulses. Examiner interprets the base station as the master ultra-wideband transceiver. See column 2, lines 49-56, lines 63-67, column 3, lines 1-7.

At the time the invention was made it would have been obvious to modify the mixed signal devices with first and second transceivers of Webster with the ultra wideband transmitter and receiver of the devices in Wynbeek. One of ordinary skill in the art would be motivated to do this since ultra-wideband communication employs a very low transmission power level and thus is highly resistant to jamming and interception. See column 3, lines 8-18, lines 28-33.

Regarding claims 11, 19-20, the claimed generating a first data frame to transmit at first data rate is disclosed by Webster by Barker preamble (Figure 3, element 303) transmitted at 1 Mbps, a Barker header (element 305) transmitted at 1 or 2 Mbps. The claimed generating a second data frame, constructed to transmit data at a second data

rate is disclosed by Webster by OFDM symbols (Figure 3, element 307) incorporating payload data transmitted at any selected data rate from among rates of 24, 36, 48, or 54 Mbps. See column 7, lines 23-32. The claimed transmitting both the first and second data frames is disclosed by Webster by mixed signal receiver (Figure 2, element 201) configured to receive mixed signal packet including Barker preamble, Barker header and OFDM symbols (Figure 3, element 301). The claimed either or both first and second frames comprised of ACG control, power level, ACG tuning and synchronization is disclosed by mixed signal packet (Figure 3, element 301) including preamble portion with automatic gain control, power, and timing parameters. Use of these parameters by multi-carrier receiver (Figure 2, element 209) allows for smooth single-carrier to multi-carrier transition and a separate OFDM preamble/header can be employed for fine-tuning of parameters. See column 5, lines 29-48, column 7, lines 10-22, column 11, lines 49-67, column 12, lines 1-60.

Webster does not disclose the claimed the ultra-wideband communication method. Wynbeek discloses a wireless communication system with a base station (Figure 2, element 203) containing a carrier wave-based transmitter (element 207) and ultra-wideband receiver (element 208) and a mobile device (element 220) with a carrier wave-based receiver (element 223) and ultra-wideband transmitter (element 228). The mobile and base stations communicate using a train of wideband pulses. Examiner interprets the base station as the master ultra-wideband transceiver. See column 2, lines 49-56, lines 63-67, column 3, lines 1-7.

At the time the invention was made it would have been obvious to modify the mixed signal devices with first and second transceivers of Webster with the ultra wideband transmitter and receiver of the devices in Wynbeek. One of ordinary skill in the art would be motivated to do this since ultra-wideband communication employs a very low transmission power level and thus is highly resistant to jamming and interception. See column 3, lines 8-18, lines 28-33.

Regarding claims 12-14, the claimed automatic gain control sections allows receiver to adjust its automatic gain control and power control is disclosed by Webster by incoming signal is received by automatic gain control (Figure 2, element 203) of mixed signal receiver (element 201) which adjusts receive power and provides corresponding signal to switch (element 205). Switch gives signal to single-carrier receiver which uses equalizer and other circuitry to analyze preamble of received signal and learns the timing and phase parameters associated with multi-path medium used to send signal. See column 6, lines 44-55, column 7, lines 10-22.

Regarding claim 15-17, the claimed synchronization section allows for receiver to obtain synchronism between a received signal and template, receiver and transmitter and synchronize a frequency is disclosed by Webster by single-carrier receiver (element 207) analyzes preamble with timing parameters and carrier frequency and phase information and compares it to known data to learn parameters associated with multi-path medium used to send signal. See column 6, lines 44-55, column 7, lines 10-22.

3. Claims 5, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster et al. in view of Wynbeek in further view of Schmidl et al. US 6,856,610.

Webster et al. and Wynbeek disclose all of the limitations of the claims except for ultra-wideband pulses comprise codes selected from group of hierarchical codes, Golay codes, orthogonal Golay codes, m-sequence codes, Kasami codes and Walsh codes. Schmidl et al. discloses WCDMA system with use of Walsh codes. See column 3, lines 38-66, column 9, lines 19-24.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify Webster et al. with use of Walsh codes. One of ordinary skill in the art would be motivated to do so for proper channel estimation. See column 9, lines 6-48.

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Webster et al. in view of Wynbeek in further view of Rice US 5,463,657.

Webster et al. and Wynbeek disclose all of the limitations of the claim except for synchronization section comprises a plurality of discrete synchronization sequences, with at least one or more synchronization sequences having a reverse polarity relative to other individual synchronization sequences in synchronization section. Rice discloses to facilitate synchronization of code blocks, the polarity of transmitted sequences are inverted after some amount of consecutive sequence periods. The polarity inversion indicating the boundary of a codeword. See column 13, lines 1-16. Examiner believes this teaches idea presented on page 33 of instant specification which

discloses reversing the polarity of one or more synchronization sequences improves probability of correct detection at end of synchronization period.

At the time the invention was made it would have been obvious to modify Webster et al. with synchronization sequences having reverse polarity as in the reverse polarity in Rice. One of ordinary skill in the art would be motivated to do this to facilitate synchronization of code blocks. See column 13, lines 13-16.

Response to Arguments

5. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. Examiner appreciates detailed description of prior art.

Applicant argues Webster et al. does not disclose an ultra-wideband communication device and ultra-wideband signals. Examiner submits new grounds of rejection using reference Wynbeek.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Jagannathan whose telephone number is 571-272-3163. The examiner can normally be reached on Monday-Friday from 8:00 a.m.-4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ
5/11/06

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5/12/06